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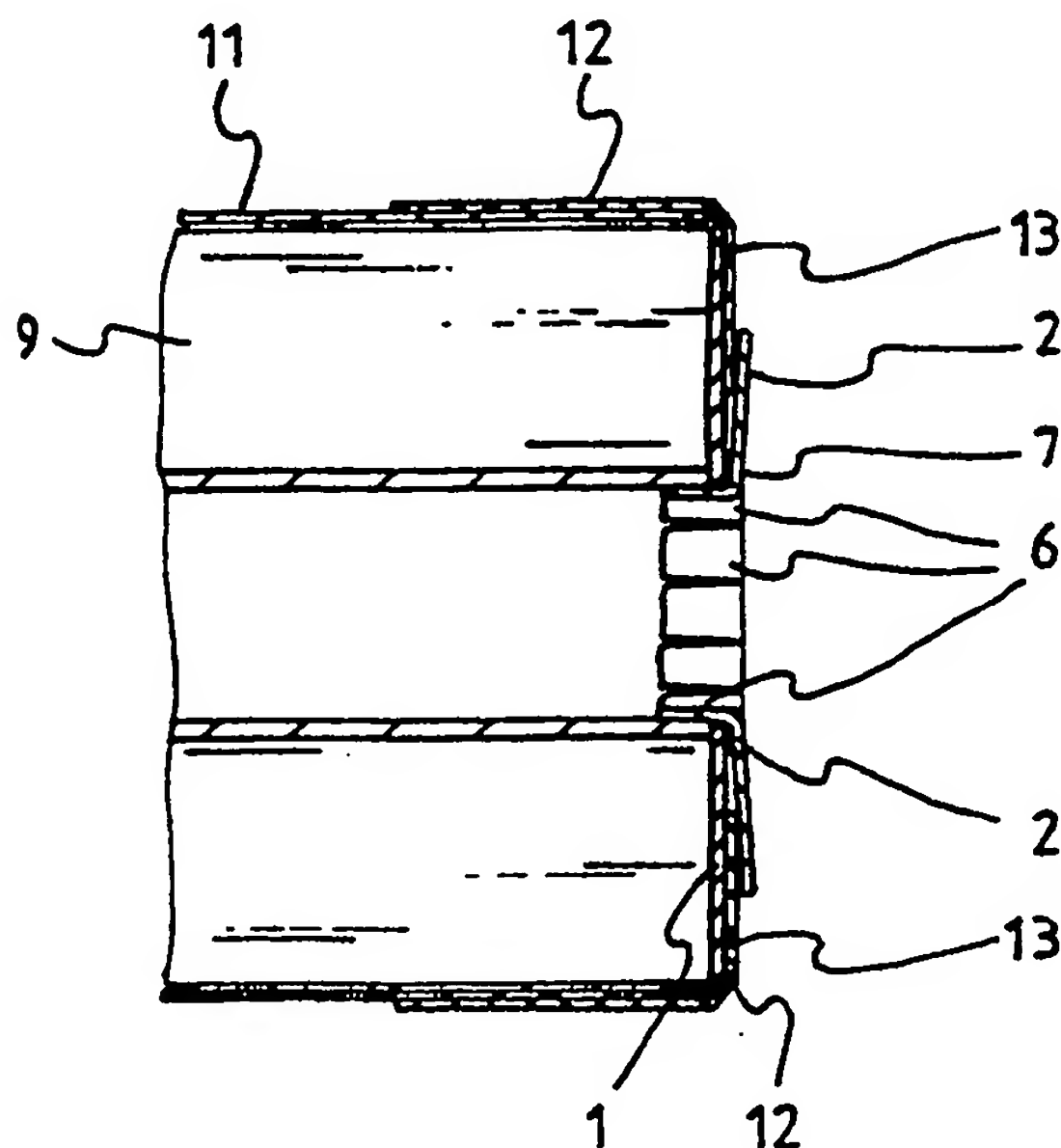
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(21) International Application Number: PCT/NL96/00293 (22) International Filing Date: 19 July 1996 (19.07.96) (30) Priority Data: 1000861 21 July 1995 (21.07.95) NL (71)(72) Applicants and Inventors: BOELE, Jan, Cornelis [NL/NL]; Berkenoord 71, NL-8172 AP Vaassen (NL). VAN OERS, Petrus, Johannes [NL/NL]; Bazuinlaan 72, NL-4876 AG Etten-Leur (NL). (74) Agent: MOREL, Christiaan, Frederik; Van Dusseldorp, Liesveld & Morel, Kerklaan 37, P.O. Box 10482, NL-7301 GL Apeldoorn (NL).		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>In English translation (filed in Dutch).</i>

(54) Title: **COMPOSITE DISC FOR THE LIGHTPROOF SEALING OF A ROLL OF LIGHT-SENSITIVE MATERIAL**

(57) Abstract

Composite disc intended for the lightproof sealing of, for example the sides of a roll consisting of a web of photographic material which is rolled up around a hollow core. The disc is composed of two parts: a rear, large disc made of a sheet of a stiff, opaque material of the desired diameter, and a front, small disc having a smaller diameter which is fastened concentrically on the first disc. The small disc is made of a different material from the first, large disc. The first, large disc is made of a plastic and the second, smaller disc is made of paper or cardboard. The disc may consist of three discs placed in front of one another, the first, or inner disc is made of an opaque synthetic material which is composed of 5 % high-density polyethylene, 5 % soot, 0 to 5 % polybutylene, and made up to 100 % with low-density polyethylene.



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Composite disc for the lightproof sealing of a roll of light-sensitive material

The invention relates to a circular disc intended for the lightproof sealing of, for example, the sides of a roll consisting of a web of photographic material which is rolled up around a hollow core.

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Photographic material which is to be transported, for example, in rolls, needs to be well sealed against light before it is used. To this end, a sheet of an opaque material is wound around the outside of the roll. This should
10 also provide the sides with good protection against light.

It is necessary, for the lightproof packaging of a roll of a material using paper or a plastic, for the sides to be covered by a disc which is opaque and the diameter of which
15 is approximately the size of the diameter of the roll.

Discs of this kind are in frequent use. Generally, for this purpose, a lightproof sheet, made of an opaque material, is wrapped one or more times around the roll, and the edges of the sheet are then joined, for example sealed or adhesively
20 bonded, to the circumferential edge of the two discs, which are placed on either side against the sides of the roll.

One drawback of this known packaging is that, after the sheet which is wrapped around the roll has been removed, it is generally not easy to remove the circular discs at the
25 two sides of the roll, since this has to take place in a darkroom. Moreover, it is better to allow the discs to remain in place so that the sides are in any case well protected against light if the roll has to be changed.

30 If these discs are not removed, however, it will be very difficult to wind the unused section of photographic material of the roll back onto the roll, since it lies against the often frayed ends of the circular discs.

35 The object of the invention is a disc which can be placed on either side of a roll, which is opaque, and which forms part of the lightproof packaging, as a result of which it

is possible, for example, to package a roll of light-sensitive material in a lightproof manner, the discs which are placed on either side of the roll enabling the web of light-sensitive material to be unwound and wound up onto the roll without the discs impeding the unwinding and winding-up, after the roll has been placed in a cartridge and the packaging has been broken.

This object of the invention is achieved using a disc, the disc being a composite disc consisting of two parts, a rear, large disc made of a sheet of a stiff, opaque material, such as paper, cardboard or a plastic, of the desired diameter, and a front, small disc having a smaller diameter than the large disc and made of paper, cardboard or the like, which is fastened concentrically on the first disc with the aid of adhesives.

These measures mean that the web of light-sensitive material can be wound back onto the roll after the roll with packaging has been placed in a lightproof cartridge and the packaging has been broken. In particular, it has been found that, as a result of the use of discs according to the invention in the packaging of sheets of material which are wound up on a roll, the discs adopt a slightly concave position, that is to say that the edge of the disc bends away from the roll, as a result of which the web of light-sensitive material is not impeded by the discs during the winding-up and unwinding of the web of material. In particular, the discs cannot curve inwards, because the roll of light-sensitive material is situated there, as a result of which the two discs always curve outwards. However, it is also possible when mounting the discs to check how the discs have warped, so that this can already be taken into account in advance. Moreover, it has been found that the larger disc mostly warps outwards over the smaller disc, the outer edge adopting the position furthest towards the outside.

These discs according to the invention thus mean that when

a roll of light-sensitive material has to be exchanged for another roll of light-sensitive material, the roll which is already situated in the cassette can be rolled back up and then removed from the cartridge or camera and replaced by the new roll. The roll removed from the camera can then, for example, be enclosed in a lightproof packaging, for example an empty cartridge, in good time, and can be reused later. As a result, scarcely any or no light-sensitive material of the roll will be lost.

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Preferably, a disc is made of two different materials, the outer disc thus being made of a different material from the inner disc, as a result of which the warping of the discs can be increased still further.

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In a preferred embodiment of the packaging, an elastic film under a certain tensioning or a shrink film is arranged in the vicinity of the transition from the discs to the starting strip or leader. It has been found that the elastic film or the shrink film results in an increase in the effect of the warping or outward bending of the circular discs. This film can be provided with a weakened line near the edges of the disc. If the roll is unwound, the film will be split along the weakened line and part of the pretensioned film will remain attached along the edge at the outer side of the disc. The pretensioned film will exert a tensile force on the edge of the disc, which force is directed towards the centre of the disc. As a result, the disc will become warped. The outward bending of the discs ensures that the web of light-sensitive material which is wound on the roll is not impeded when being wound up or unwound. This is particularly important if the roll with light-sensitive material has to be changed. Up until now, the discs arranged on the sides of the rolls always impeded the rewinding of the web, as a result of which part of the web of light-sensitive material always had to be removed and was lost when the roll was reinserted into the cartridge.

The invention will be explained in more detail with reference to the drawing, in which:

5 Fig. 1 shows a front view of two constituent parts of a disc according to the invention before these parts are fastened to one another;

10 Fig. 2 shows a cross-section of a composite disc according to the invention;

Fig. 3 shows a cross-section of the same disc from Figure 2 arranged on a roll;

15 Fig. 4 shows a cross-section of a disc according to the invention with a strip of elastic film arranged on the packaged roll;

20 Fig. 5 shows a cross-section of the disc from Figure 4 after the packaging has been removed.

25 Figure 1 shows two discs 1, 2 which can be assembled to form a composite disc according to the invention. The disc 1 is circular and comprises a concentric, circular opening 3, the diameter of which corresponds essentially to the inside diameter of the roll of light-sensitive material which is to be packaged. The outer circumference of the disc 1 has a diameter which essentially corresponds to the outside diameter of the roll to be packaged. The disc 1 is made of a lightproof material.

30 The disc 2 has a smaller diameter than the disc 1. The disc 2 is designed with a concentric, circular opening 4, the diameter of which is smaller than the diameter of the opening 3 in the disc 1. Slits 5 have been made at regular intervals from one another transversely over the circumference of the opening 4, which slits have essentially identical lengths. These slits 5 together with the circumference of the opening 4 delimit small lips 6 which can be folded over in order to be fastened to the inside of the

roll when arranging the discs on the sides of the roll. The length of the slits 5 is such that the opening 4 after the small lips 6 have been folded over has more or less the same diameter as the opening 3 in the disc 1.

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Figure 2 shows a composite disc 7 which is formed by placing the two discs 1, 2, concentrically on top of one another and joining them to one another over the entire contact surface 8 by means of an adhesive bond. Initially, the disc 7 formed in this manner will be more or less flat, but over the course of time the disc 7 will become slightly warped, as depicted in Figure 3, due to the contraction of the adhesive bond. The small lips 6 of the disc 2 are folded through the opening 3 in the disc 1 and can thus be fastened to the inside of the roll to be packaged.

Figure 3 shows a cross-section of an end of a roll 9 of light-sensitive material which is wound up around a hollow, cylindrical core 10. A disc 7 is arranged on both sides of the roll 9. Due to the adhesive bond between the disc 1 and the disc 2, the composite disc 7 will become warped after a period of time. The disc 7 is consequently somewhat bent away from the roll 9. The small lips 6 of the disc 2 are fastened to the inside of the core 10 by means of an adhesive bond.

In Figure 4, the roll 9 has been packaged by means of a sheet or film 11 of lightproof packaging material which is wound around the roll 9, the side of the roll 9 being covered by means of a lightproof disc 7. The area between the film 11 and the disc 7 is covered over the entire circumference of the roll 9 by means of a strip of elastic film or shrink film 12 which is arranged in a prestressed state. The strip 12 is fastened by means of an adhesive bond or a seal to the film packaging 11. The strip 12 is likewise fastened by means, for example, of an adhesive bond or seal to the disc 1, the strip 12 being partially overlapped by the disc 2, which is fastened to this overlapped part of the strip 12, for example by means of an

adhesive bond. The strip 12 is provided, at a distance from the circumferential edge of the roll 9, with a weakened line 13, for example a perforation, which is situated between, on the one hand, the connection of the strip 12 to the packaging film 11 and, on the other hand, the connection of the strip 12 to the disc 7.

On removing the packaging 11 of the roll 9, the strip 12 is torn off along the weakening 13, that part of the strip 12 which was fastened to the packaging film 11 likewise being removed. The discs 7 are not removed. Since these become warped and bend away from the roll 9, the discs 7 will not be in the way when unrolling and rewinding the light-sensitive material on the roll 9.

Figure 5 depicts the roll 9 with the film packaging 11 removed, the strip 12 likewise having been partially detached. A remaining part 14 of the strip 12, specifically that part of the strip 12 which is fastened between the inner disc 1 and the outer disc 2, remains behind. Due to the fact that the strip 12 was arranged in a prestretched state, the remaining part 14 will tend to curl up away from the roll, as a result of which the disc 7 warps further and bends further away from the roll.

CLAIMS

1. Composite disc intended for the lightproof sealing of a cylindrical roll, such as for example the lightproof sealing of the sides of a roll consisting of a web of photographic material which is rolled up around a hollow
5 core, **characterized in that** the disc consists of a first disc of a desired diameter which approximately corresponds, for example, to the diameter of the cylindrical roll and which is made of a sheet of a material such as paper, cardboard or a plastic which is opaque or at least has been
10 made lightproof, and in that a second disc having a smaller diameter than the first disc is fastened against the first disc with the aid of adhesives, for example, concentrically with respect to the first disc.
- 15 2. Composite disc according to Claim 1, **characterized in that** the small disc is made of a different material from the first, large disc.
3. Composite disc according to Claim 1, **characterized in**
20 **that** the first, large disc is made of a plastic and the second, smaller disc is made of paper or cardboard.
4. Composite disc according to Claim 1, **characterized in**
25 **that** the disc consists of three layers, a first, inner, large disc, a second, outer, small disc and an intermediate layer consisting of a stretched film which is placed, in the stretched state, between the two discs with the aid of adhesives.
- 30 5. Composite disc according to one of the preceding claims, **characterized in that** the first, or inner, large disc is made of an opaque synthetic material which is composed of 5 % high-density polyethylene, 5 % soot, 0 to 5 % polybutylene and made up to 100 % with low-density polye-
35 thylene.

6. Method for producing a composite disc, characterized in that first of all the large, opaque disc is placed against the side of a roll, in that, after the outside of the roll has furthermore been covered in a lightproof manner by, for example, a sheet of material such as an opaque sheet, the circular outer edge of the roll is covered by an elastically stretched sheet of an opaque material, so that the large, opaque disc is partially covered by the stretched sheet, and in that the small, circular disc is then partially fastened concentrically on the stretched sheet and the first, opaque sheet by, for example, adhesives.

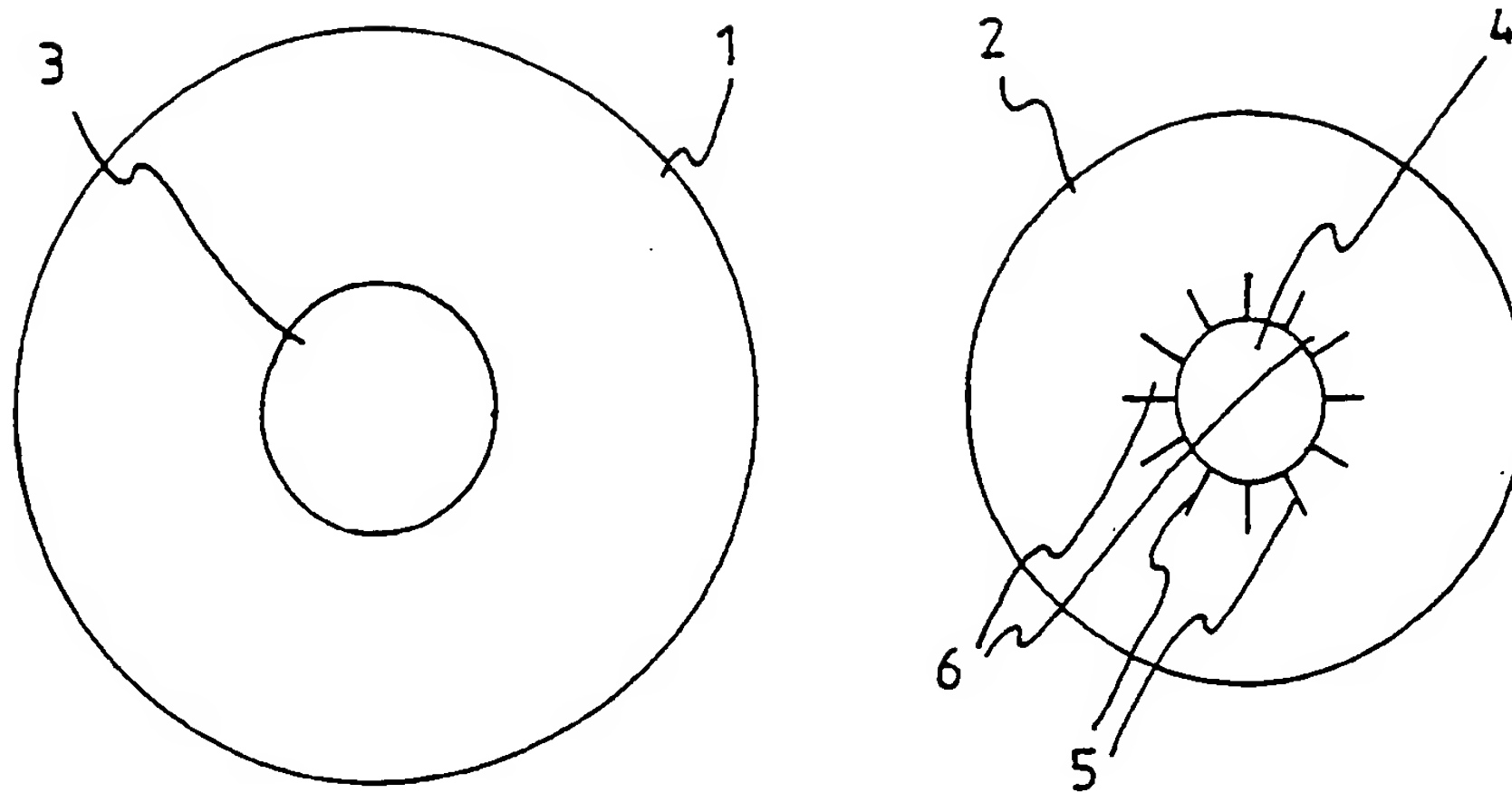


FIG. 1

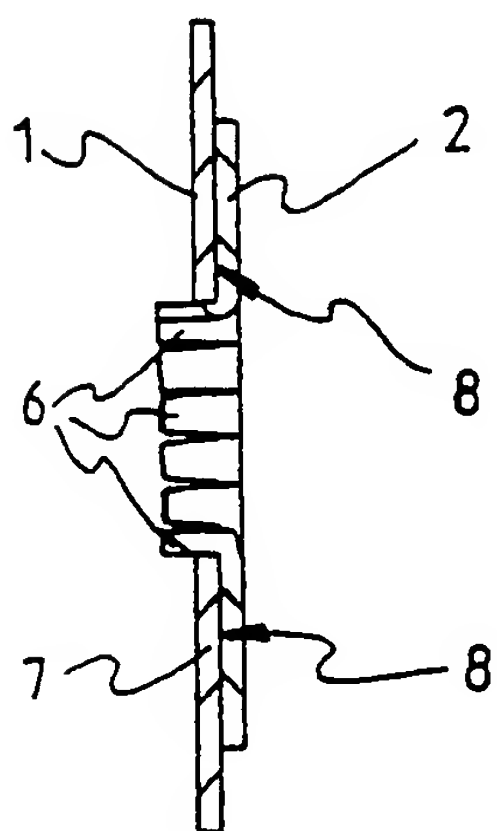


FIG. 2

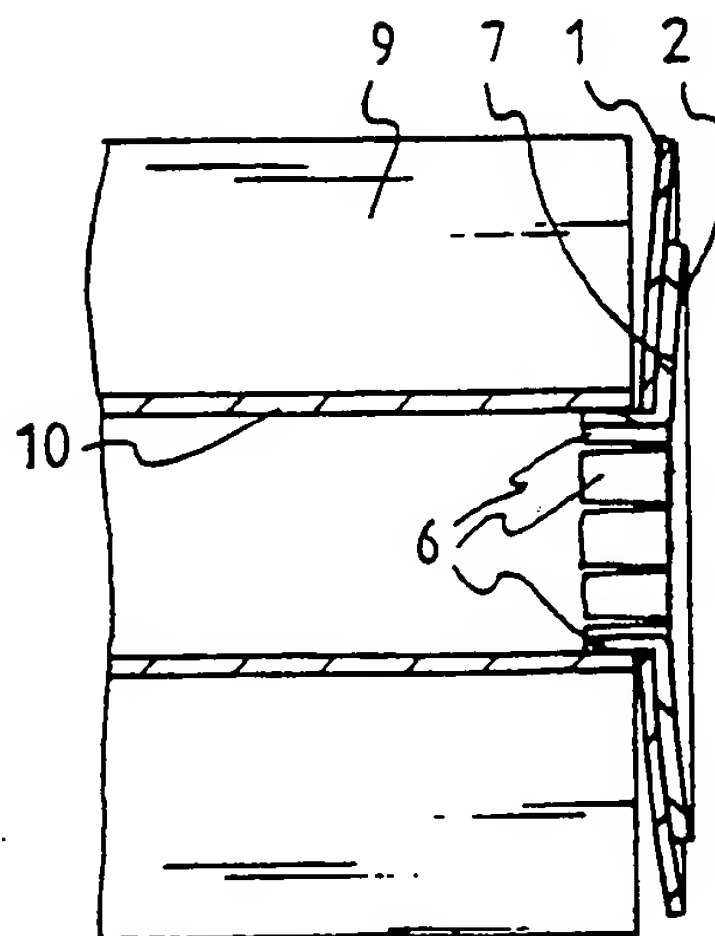
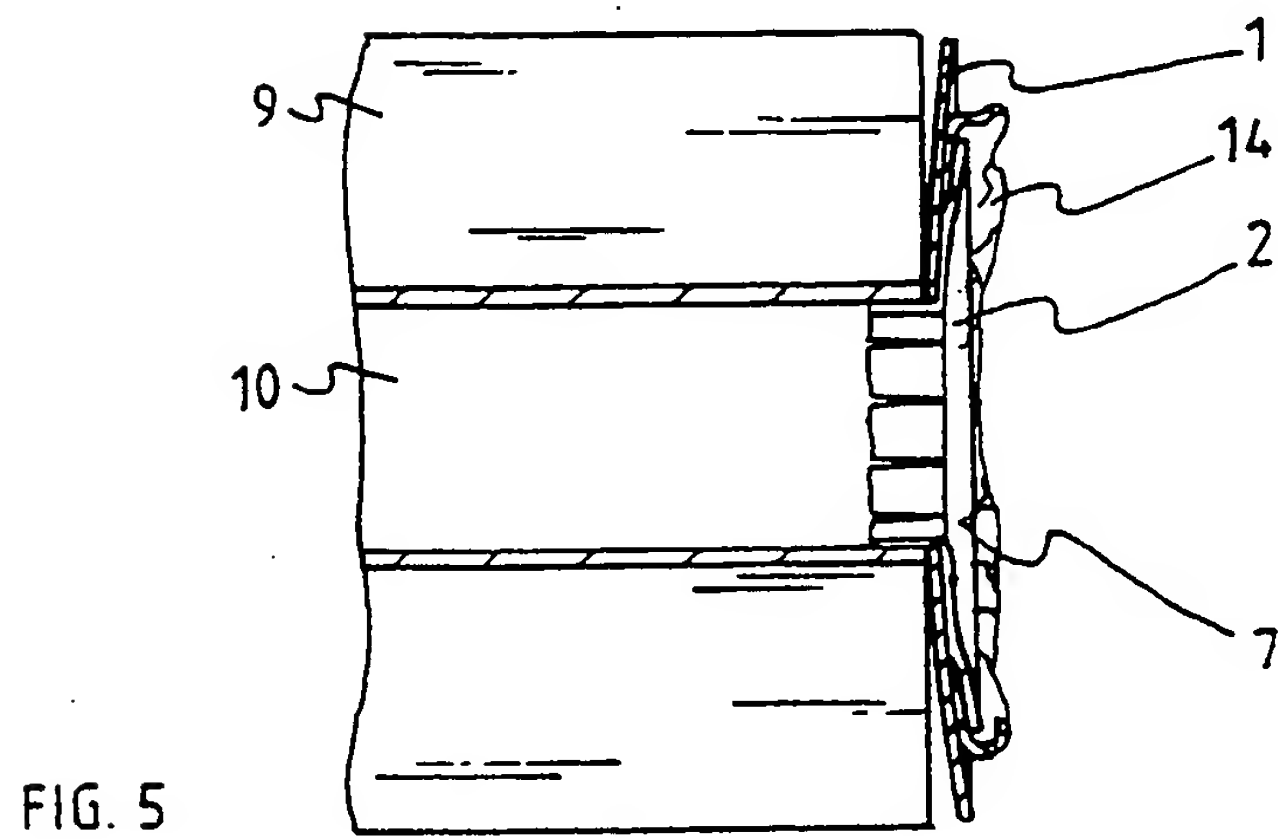
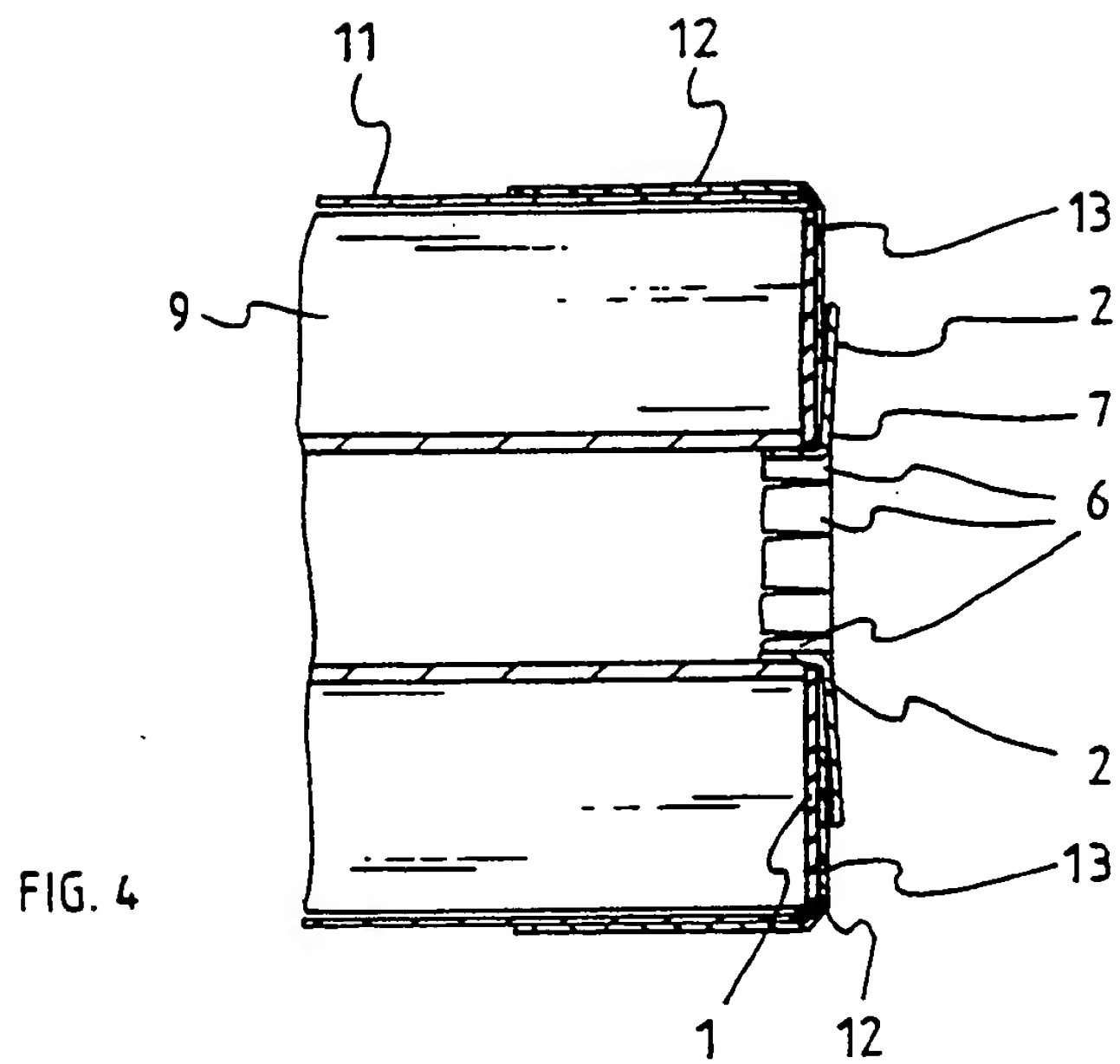


FIG. 3

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SUBSTITUTE SHEET (RULE 26)

INTERNATIONAL SEARCH REPORT

Intern: 1 Application No
PCT/NL 96/00293A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G03C3/00 B65D85/672

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G03C B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE,A,43 37 368 (DU PONT) 8 December 1994 see figures 1,3,5,6,11 ---	1-6
Y	EP,A,0 539 931 (KODAK) 5 May 1993 see figures 2,3,5 -----	1-6

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Information on patent family members

Intern: 1 Application No
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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